Low-skilled labor markets as a constraint on business strategy choices: A theoretical approach

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Abstract

The characteristics of the environment in which a firm operates may be constraining a firm's choice of strategy in order to create and sustain a competitive advantage. In particular, we focus on the fact that the level of development of local human capital may be an important factor constraining the set of strategies that the firm may actually choose. Next, certain feasible strategies in a high-skilled labor market may become unfeasible in a low-skilled labor market. To illustrate this point, we propose a theoretical model in which the level of quality of a firm's product depends on effort exerted by local high-productivity workers. We show that the firm may choose to produce a low-quality product for sufficiently high costs of finding high-productivity workers and inducing them to exert effort to increase the quality of the product.

Keywords: human capital investments, low-skilled labor, strategy formulation and implementation, human resource management practices

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1 Introduction

Firms seek to develop and sustain a competitive advantage, which enables them to keep competitors at bay. There are many potential sources of competitive advantage, for instance, those related to the access to exclusive, non-imitable inputs or assets, those related to specific product characteristics, or those due to the existence of a particular regulatory framework. Often, the contribution of human capital (HC) is crucial to develop and sustain a competitive advantage (Barney, 1991, 1995; Nyberg et al., 2014). In this paper, we note that the level of HC development may be an important factor constraining the set of feasible strategies that the firm may choose. More precisely, if the average skills in a specific labor market are sufficiently low, thereby making some strategies that require a higher degree of HC too costly to implement, firms may even decide not to invest in hiring and training workers at all.

We propose a simple theoretical model to illustrate this point. Specifically, our model is one of vertical product differentiation in which a domestic firm must choose its level of quality to compete against foreign producers in the domestic market. Our approach to quality is commonly defined in the Industrial Organization literature as an observable product characteristic that increases consumers' willingness to pay, for instance, a computer's storage capacity or a car's engine power (Tirole, 1988). In our paper, quality does not refer to continuous improvement or the satisfaction of customers' and workers' needs and expectations, which are commonly used concepts in the literature on Quality Management. In our setting, when two products differ in their quality levels, we say that they are vertically differentiated (Tirole, 1988) in such a way that if both were sold at the same price, all consumers would unanimously prefer the higher-quality product. The study of the implications of competition with vertically differentiated products has spawned a large number of contributions in the field of Industrial Organization, such as Shaked and Sutton (1982, 1983), Motta (1993), Greenstein and Ramey (1998), or Galera et al. (2017), to cite a few.

Our model of quality choice may be regarded as one of creation of competitive advantage, since a higher quality level allows the firm to introduce a higher margin than its competitors, thereby escaping the Bertrand trap[1] (Tirole, 1988). In our model, the creation of competitive advantage, via product

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[1]In the absence of product differentiation, the equilibrium in a price-competition game is both firms choosing a price equal to marginal cost.

quality, is directly linked to the availability and quality of workers. Indeed, the domestic firm has to attract high-productivity workers and compensate them for their costly effort in order to raise the quality of its product. We show that the level of quality of the domestic firm's product depends on the level of available HC. In particular, we show that a higher level of available HC, represented by a greater probability of finding a high-productivity worker chosen at random, never reduces the quality level of the domestic firm's product.

The model sheds light on the relationship between 'available' HC and 'feasible' strategy choices in a low-skilled labor market. If the level of knowledge, skills, and abilities (KSA) in the environment is low –what we refer to generically as low skills- then the cost of adapting to the requirements of the desired strategy will be very high. Hence, there are some strategies that become infeasible given the level of KSA in the local market. As a consequence, human resources management (HRM) may fail to adapt the HC to the desired strategy at a reasonable cost.

As previously noted, the choice of strategy to create and sustain a competitive advantage is not made in isolation from the environment in which the firm operates. Indeed, the level of skills in the local labor market plays a very influential role on firms. There is extensive evidence of the existence of a mismatch between job requirements and the level of skills in many markets. For instance, according to ManpowerGroup (2014), almost 57% of Colombian companies report difficulties in finding the required HC, whether general or firm-specific. In addition, the World Economic Forum (2014) shows that approximately 4 in every 10 establishments report difficulties in finding workers with te required skills.

The availability of skilled labor also affects the strategies of firms in many countries. In low-income countries, under-qualification is a relevant problem, resulting in low productivity growth and low potential for economic diversification. Additionally, J. P. Morgan (2016) shows the existence of a gap between the supply and demand for highly skilled labor in the Chinese market, with regional differences in the type of skills required for the country strategy. Certainly, Chinese firms are moving up in the value chain from exporting low value-added goods to developing modern services industries and manufacturing with higher value-added, continuously developing different methods of production and of technology. In the case of the United States, recent evidence in Porter and Raman (2014) shows that the average productivity in the market for mid-skilled jobs decreased, negatively influencing both

the competitiveness and the employment indicators of the country. This deterioration is explained by the difficulties of domestic companies in attracting talent with the required skills, ultimately affecting firms' performances. The article also suggests that education and workforce development systems in the United States are not producing skills relevant to today's workplace and for jobs that are in high demand.

Therefore, lack of access to high-quality HC may be a binding constraint on firms' strategy choices, effectively preventing firms from implementing what would be desirable in an environment where access to HC was available. By its very nature, HC is embodied in people (Becker, 1964), therefore, in practice most firms must obtain this HC from their local environment, and engage in further training to implement a target strategy. This is particularly the case for those firms whose cost of access to alternative sources of HC is high enough. Hence, there may be a mismatch between the required level of HC and the HC that is available locally. The direct consequence is that the set of feasible strategies is reduced.

Such mismatches in the labor market may be associated with detrimental effects on employee turnover, productivity, psychological factor, and non-work situations (Kalleberg, 2008). In fact, little is known about two potential effects on firms of a low-skilled labor market. First, the impact on the feasibility of the business strategy formulation, since low skills in the labor market widen the gap between the desired (formulation) and feasible (implementation) strategy. Thus, firms have reduced incentives to hire and train HC if it is difficult to find workers with the appropriate skills, due to poor labor market qualifications. Therefore, unmatched demand for skills potentially widens the gap between the desired and the feasible strategy implementation. Second, contrary to Barney (1991, 1995), a low-skilled labor market could constrain the development of sustained competitive advantages. Therefore, firms could potentially limit investments to develop firm-specific HC if the target competitive position that is based on high-productivity employees is too costly to implement, given the level of skills in the local labor market.

In addition, the evolution and dynamism of contextual market factors such as technology, market competition, or globalization push companies as well as job requirements to adapt at the speed and complexity of the evolution. Recent literature provides a diverse set of sources of mismatches such as skill, geographical, temporal, earning, and work-family factors. The strands of the literature on

Industrial Organization and Personnel Psychology that study industries and organizations framed this as "person-environment fit" (Kalleberg, 2008). This article presents a particular mechanism with empirical and theoretical implications: we expect the gap between the desired and feasible firms' competitive position to increase with the gap between HC skills and workforce demands.

The remainder of our paper is organized as follows: Section 2 discusses several theoretical contributions relevant to our analysis. Section 3 proposes and develops the theoretical model. Section 4 discusses the implications of the model. Finally, Section 5 presents the study's conclusions.

2 Theoretical Foundations

The effects of a low-skilled labor market on the firm's decision on HC allocation implies a theoretical overlapping among the fields of Strategy, Human Resources, and Industrial Organization with strong implications for the area of strategic HRM. Hence, since the theoretical and empirical literatures have ignored this potential effect on firm-specific investments, this section presents a brief literature review in order to support the main assumption in the model and to extend the scope of the management literature through the assembling of diverse concepts and theoretical fields.

Human capital theory supports that investing in people improves total factor productivity (Psacharopoulos, 1985; Cohn and Geske, 1990; Fitz-Enz, 2000), thus increasing the organizational performance, and also at the aggregate level increasing returns that benefit the entire society (Becker, 1964). Additionally, as noticed by Ogunade (2011), investments spur economic growth by attracting foreign direct investment used in capital-intensive production processes, becoming an important source of advantage for developing countries (Noorbakhsh et al., 2001). From the previous discussion, the level of HC is not fully owned and controlled by firms, therefore the decision to invest to fit with the organizational goals is eventually uncertain by nature.

Hatch and Dyer (2004); Palmer (2008) and Ogunade (2011) also note that skills are one of the main and indispensable factors that have potential to not only improve the productivity of the individual (e.g., wage rate, employability, job stability), the firm (e.g., cost advantages, output per unit of labor, market share and export performance) and the economy but also that the training received –even by low level staff, such as equipment operators- builds problem solving capacity in the companies.

Factors such as the dynamism of economies symbiotically related with competitive pressures, or

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the speed of technological innovation, among others, naturally create gaps between the supply and demand for skills in the labor force (Bresnahan et al., 2002). The related literature frames this discussion in the 'mismatch' effects of workers and workplaces. These effects are largely studied in the fields of Sociology (Handel, 2003), Psychology (Wilk et al., 1995; Walsh, 2006), and Economics (Becker, 1964; Tyler et al., 1995), focusing on their negative effects on hiring, wage inequalities, unemployment, employer and employee dissatisfaction, stress issues, or output productivity. However, little is known on how a lack of matching in the labor market affects the way management decides on strategy formulation, or more precisely, how strategy formulation is affected by a scarcity of required skills in the labor market that management believes are the path toward a competitive advantage. Thus, this study provides a theoretical insight suggesting that the nature of businesses may change in lower (higher) skilled labor market. Specifically, we explore the investment decisions behavior to create competitive advantages through HC.

Since the early contribution to Human Capital Theory in Becker (1964), the literature has supported the view that investments in firm-specific training raise firm productivity (Crook et al., 2011). Therefore, firm-specific investment issues motivate scholars to develop a mechanism for the achievement of an SCA; for example, HC investments to attract and train a specific and highly qualified workforce to leverage the HC of specific companies (Bhattacharya and Wright, 2005). However, firms face contingency factors (e.g. an unexpected evolution in technology that creates a different consumption patterns of clients) that potentially constrain the adjustment between employees' KSA and the expected strategy in spite of the effort made to achieve the strategy requirements, thus creating uncertainty about the expected outputs of the investments to build firm-specific HC.

Investments in jobs-training –training that creates new skills or updates existent skills- enhance workers' performance (Garavan et al., 2012). Nevertheless, an extensive literature review in Posthuma et al. (2013) presents evidence on firms being reluctant to invest in HRM practices. Similarly, some authors use Real Options Theory (Bowman and Hurry, 1993; Sanchez, 2003) to study the contextual factors that explain the variability of investment in human resources and how this variability relates to organizational performance (Driouchi and Bennett, 2012; Bhattacharya et al., 2014). In this study, we argue that the effects of a low-skilled labor market may hamper organizational learning, or obtaining the proper skills to implement specific strategies.

Among the contributions to the field of Strategy, recent contributions such as Kaufman and Miller (2011), Chami-Malaeb and Garavan (2013), and Bhattacharya and Wright (2005) support that investment in HRM practices such as firm-specific training, development, leadership development, talent development, and organizational learning processes drives SCA and, ultimately, an enhanced organizational performance. The RBV's proposition (Wernerfelt, 1984; Barney, 1991) contributes conceptually to the research agenda in the HRM field by adding the firms-specificity condition of the HC (Becker, 1964; Campbell et al., 2012). More precisely, regarding how HRM strategy develops valuable, unique, rare, inimitable, and nontransferable employee KSA that constitutes the core competences of the firm (Shaw et al., 2013). Therefore, since the seminal work in Barney (1991, 1995), HRM's scholars have made a considerable effort to advance the firm's sustained competitive advantage (SCA) and hence the firm's performance contribution (Nyberg et al., 2014). Indeed, a growing body of the literature on HRM converges with the strategy field in the resource-based view (RBV) of the firm (Rumelt, 1984; Wernerfelt, 1984; Garavan, 2007; Crook et al., 2011; Shaw et al., 2013), specifically considering HC (knowledge, skills, abilities) as key factors to enhance firms' performances, and ultimately to achieve a competitive advantage (Barney, 1991; Wright and McMahan, 1992; Wright et al., 1994). Thus, we provide a linkage between strategy and strategic HRM literature (Boxall, 1996; Wright et al., 2001).

This article shows that some firm strategies requiring HC development may also provide competitive advantages in specific industries and countries. In other words, firms may fail to pursue an SCA through HC. For example, for commodities, such as flowers, agro-businesses do not have an imperative to invest in HC development of their workforce because its sustainability depends on the low skills of local workers in flower production. In this instance, the competitiveness of firms is far more dependent on external factors, such as climate conditions, exchange rates and other non-controllable factors. Therefore, in this industry competitiveness is not as dependent on HC development as it is in other industries such as technology, R&D or more sophisticated service industries.

Meanwhile, those strategies that require a more developed HC may take longer to develop and be worse in the short-run (relative to those with a low level of HC development). Uncertainty, time to develop and a low SKA environment would therefore favor the adoption of low HC strategies, leading firms to an equilibrium where firms are not differentiated and thus none of them has an SCA

(e.g. industries that need innovation to address new types of distribution channels, availability of products and new generations of customers, such as editorial industries).

This study also suggests that time increases the likelihood of the desired strategy being dominated by some other alternative. Of course, there is an inverse relationship between the expected time to implement a given strategy and the quality of available KSA. As the time to implement increases, the chances that the strategy is dominated by, say, an alternative strategy that makes use of a new technology, or that the government introduces a new legislation that makes the initial technology unprofitable, increase.

In addition, the time-variable becomes crucial for our hypothesis. Time transition to acquire and train HC becomes risky with the uncertainty of matching the strategy in low-KSA labor markets, even more so if markets (for example, the HC needed in the home video industry at the time of Blockbuster vs the Netflix era) demand more sophisticated products and services (innovations). Therefore, in certain industries and/or market conditions entrepreneurs may have lower incentives to acquire and/or develop the optimal set of KSA to adjust them to the expected strategy due to time-uncertainty. Indeed, firms can achieve a competitive advantage, but one unsustainable through time. The HRM is an ineffective mechanism to reach feasible strategic objectives such as higher levels of productivity, especially when radical product or service innovations are required by the business in the face of new competitors or fast-changing conditions (Christensen et al., 2015).

To conclude, in this article we propose a simple model that contributes theoretically to the strategic human resource management (SHRM) field through the study of investments in (firm-specific) HC in an environment with a low-skilled labor force. The model is expected to show that with lower KSA available in the labor market, the firm has the option to not allocate resources in an HC formation that constitute the basis of the SCA in the RBV.

3   Model

The purpose of our theoretical model is to show that access to HC may be a relevant constraint to the firm's choice of strategy. As noted in the introduction of this paper, the theoretical model that we propose is one of vertical product differentiation. This means that competing products differ in their quality levels –where quality is to be understood as an objective product characteristic that increases

consumers' willingness to pay- and the strategy to be chosen by the firm is the level of quality of its product. Quality levels can be objectively ranked, in the sense that if any two products were offered at the same price, all consumers would consume the higher-quality product.

On the demand side, and following Shaked and Sutton (1982) and Shaked and Sutton (1983), we consider a continuum of consumers with heterogeneous willingness to pay for quality, with their taste parameter being distributed according to a uniform distribution on the $[0, 1]$ interval, and where each consumer purchases at most one unit of one of the products being offered. We assume that there is a unit mass of consumers, and therefore the size of the relevant market is normalized to one. A consumer who is characterized by a willingness to pay for quality θ and consumes one unit of a good with quality s at price p experiences a net utility given by

$$u(\theta) = \theta s - p$$

Consumers compare the net utility from purchasing the different goods, which have different qualities and are sold at different prices, and choose the good that offers the highest net utility, or decide not to purchase a good at all. Therefore, in an equilibrium in which two quality levels are sold, we will observe that consumers with the highest willingness to pay θ purchase the high-quality good, some consumers with intermediate willingness to pay θ will purchase the low-quality good, and finally consumers with the lowest willingness to pay θ will not purchase a good at all. The uniform distribution of consumers' willingness to pay gives rise to linear demand functions of the type $p = s(1 - q)$, where s is the level of quality of the product in question. Tirole (1988) and Motta (1993) offer a more extensive discussion of models of vertical differentiation.

On the supply side, we assume that there is a large number of foreign producers that offer a product with quality level s^W. To simplify our analysis and to reduce the number of parameters, we introduce the assumption $s^W = 1$. We assume that firms compete in prices, which implies that foreign producers supply the good at marginal cost $c^W > 0$. This marginal cost is inclusive of any transportation costs or import tariffs. We also assume that there is a single domestic firm with marginal cost assumed to be, for simplicity, $c^D = 0$. In the absence of any quality-improving actions, the quality of the product equals a lower-bound level $s_0 > 0$.

The domestic firm's problem is one of choice of quality for its product. We assume that the firm

must combine physical assets with HC embodied in a worker in order to achieve the desired quality level. Physical assets are specific to the quality level chosen, and must match the worker's effort in the sense that an underprovision or overprovision of effort reduces the quality level to s_0. For simplicity, we assume that the cost of investment in physical assets is zero, regardless of the desired quality level. We also assume that there is a linear relationship between the worker's effort and the quality of the product (assuming a correct matching with the physical assets). Furthermore, we assume that the worker experiences a convex disutility of effort, represented by the function $\phi(e)$, where $\phi'(e) > 0$, and $\phi''(e) > 0$. It is easy to see that these two assumptions, namely, constant marginal returns on effort and convex cost of effort, imply that it will be increasingly costlier for the firm to compensate the worker to exert extra units of effort. If no effort is provided, then the quality level of the domestic firm's product is s_0. In particular, we assume that $\phi(e) = \alpha e^2$. Notice that the lower α is, the lower the worker's effort to achieve a given level of product quality.

We assume that there are two types of workers, namely, low-productivity and high-productivity workers. All potential workers are risk-neutral and the difference between the two is the rate at which they increase the quality of the product by means of their effort. Specifically, the change in quality as a function of the worker's productivity is given by $\Delta s = \beta_i \cdot e$, where $\beta_i \in \{0, 1\}$. Thus, we are introducing the simplifying assumption that low-productivity workers are totally useless for the firm's purpose of raising the quality level of the domestic firm's product. We assume for simplicity that the level of quality is observable, and hence payments may be made conditional on the level of quality. It is easy to see that a contract that pays the worker an amount equal to the disutility of effort only if the desired quality level is achieved will provide the worker with the right incentives to exert costly effort. This way, the cost of implementing the desired quality level s^D will depend on the parameter α.

We assume that the worker's type is subject to imperfect observability. In particular, neither the potential worker nor the firm knows ex-ante whether a given worker's type is high-productivity or low-productivity. The worker's type is revealed only at cost f, which may be interpreted as the initial training cost, that is, to match the installed physical capital and the worker's skills. Both potential workers and the firm know that the probability of the worker being a high-productivity one is $\gamma \in (0, 1)$. Therefore, if the firm is searching for a high-productivity worker, it is expected to take a

number of draws from the distribution of workers. It is easy to see that the expected number of draws to obtain a high-productivity worker decreases with the proportion of high-productivity workers, γ. Specifically, the expected cost of selecting a high-productivity worker is given by $\frac{f}{\gamma}$.

Therefore, we propose a model in which there is a hiring decision on the domestic firm's side that conditions its strategy in the product market. Summarizing the sequence of decisions, the timing of the model is therefore given by

1. The domestic firm chooses its desired quality level s^D and invests in physical assets accordingly.

2. The domestic firm hires a potential manager, offering a quality-contingent payment. After investing f, the manager's type is revealed. If the desired quality level is $s^D > s_0$ and the manager's productivity is low, then the manager leaves the firm, and the domestic firm may choose to repeat the hiring process.

3. Prices for the final products are chosen simultaneously by the domestic firm and the foreign producers, production occurs, and profits are realized.

As it is usually done in sequential games, we proceed backwards and analyze the final stage first. This implies the computation of the equilibrium prices, quantities and profits, given quality levels $s^W = 1$ and s^D. Keep in mind that foreign producers always post a price equal to marginal cost, that is, $p^W = c$. Given these prices, the domestic firm's profit function $\pi^D(s^D, 1)$ may be constructed. To do so, we will have to distinguish between the cases of the domestic firm having a higher quality level and those where the domestic firm produces with a lower level of quality.

First, given the quality level of foreign producers, $s^W = 1$, if $s^D < 1$ then the domestic firm is the producer of the low-quality product. If the prices posted by the foreign and domestic producers are $p^W = c^W$ and p^D respectively, then demands are

$$q^W\left(p^W, p^D\right) = 1 - \frac{p^W - p^D}{s^W - s^D} \text{ and } q^D\left(p^D, p^W\right) = \frac{s^D p^W - s^W p^D}{s^D\left(s^W - s^D\right)}$$

Given our assumption on the industry structure of the foreign producers, we know that $p^W = c^W$. The domestic firm will consider the above demand function and choose the price that maximizes its

profits. In equilibrium, prices are

$$p^W = c^W \text{ and } p^D\left(s^D, 1\right) = \frac{c^W s^D}{2},$$

whereas profits are

$$\pi^W\left(1, s^D\right) = 0 \text{ and } \pi^D\left(s^D, 1\right) = \frac{\left(s^D c^W\right)^2}{4 s^D\left(1 - s^D\right)}.$$

These expressions are correct as long as both firms have positive market shares in equilibrium, which is the case if quality differences are not too large. In fact, there is a quality level of the domestic firm's product, call it $\tilde{s}^D$ such that for $s^D \geq \tilde{s}^D$ the foreign producers' sales in the domestic market are zero. Specifically, this is the case when $s^D \geq \tilde{s}^D = \frac{2 - 2c^W}{2 - c^W}$. Notice that this lower bound is smaller than one. For this interval of quality levels of the domestic firm, the price posted will be such that the foreign producers' output level exactly equals zero. That is, $p^D = s^S - 1 + c^W$ and hence,

$$\pi^D = \frac{\left(1 - c^W\right)\left(s^D - 1 + c^W\right)}{s^D}.$$

Indeed, when the domestic firm's quality level is exactly one, then it chooses a price equal to the foreign producer's cost, as in a Bertrand model with non-differentiated products and asymmetric costs.

Finally, when the domestic firm chooses a high-enough level of quality (while the quality level of foreign producers is kept at unity), then increased differentiation relaxes price competition, and both firms produce positive output levels in equilibrium. This is the case if $s^D\left(2c^W - 1\right) \geq c^W - 1$. For values of the domestic firm's quality level exceeding this threshold level, profits are

$$\pi^D = \frac{\left(s^D - 1 + c^W\right)^2}{4\left(s^D - 1\right)}$$

Now, in anticipation of these profits, the domestic firm chooses the desired level of quality to maximize its net profits:

$$\max_{s^D \geq s_0} \pi^D\left(s^D, s^W\right) - C\left(s^D\right)$$

where $C\left(s^D\right)$ is the firm's cost of implementing the desired quality level s^D. This cost function is

convex and includes the expected cost of finding a high-productivity worker and the costs associated with the worker's disutility of effort. It is convex because the (high-productivity) worker's disutility function is convex. Furthermore, it is vertically shifted as the proportion of low-productivity workers, $1 - \gamma$, increases. These facts allows us to formulate the following propositions:

Proposition 1 *The optimal quality level, s^D, is non-increasing in α.*

Proof. Note that the cost of effort function is convex and that it constitutes the cost of implementing the desired quality level. Therefore, the marginal cost is given by $2\alpha s^D$, which implies that as α increases, the optimal quality level can not increase. ■

Proposition 2 *A reduction in the proportion of high-productivity managers reduces the profitability of the domestic firm adopting a high-quality strategy, that is, of choosing $s^D > s_0$.*

Proof. Notice that the optimal quality level is given by the expression

$$\frac{\partial \pi^D \left(s^D, 1 \right)}{\partial s^D} = C' \left(s^D \right).$$

An increase or decrease in the proportion of high-productivity managers, γ, does not alter the value of the optimal quality level, call it s^*. However, it does alter the comparison between the level of profits in that optimal quality level and at s_0, since an increase in γ increases the fixed cost in the case of choosing a quality level greater than s_0. In fact, there is a threshold value of the proportion of high-productivity managers, $\hat{\gamma}$, such that for $\gamma \geq \hat{\gamma}$, the domestic firm is better off at the initial quality level s_0. ■

4 Discussion

Our very stylized model indicates that the available HC in the environment in which a firm operates may effectively constrain the choice of strategies. Our model considers two different features of the labor market: availability of high-productivity workers, represented by the parameter γ, and labor force skills, represented by the parameter α. The former feature refers to the stock of human capital that exists in the market, whereas the latter may be the object of improvement by means of talent development (Lepeley, 2017). The model shows that both features directly affect the quality of the final

product, which constitutes the source of vertical differentiation relative to competitors and ultimately determines the ability to charge higher margins. Therefore, the model suggests that HRM may be a way both to improve the availability of high-productivity workers and manage talent within the firm. For instance, γ may increase if screening procedures at the firm level are more effective. Similarly, f may decrease by making the identification of the productivity of the worker more efficient. Additionally, once a productive worker has been identified, the firm may implement talent management strategies to increase the rate of return of HC. In our model, this would be captured by a reduction in α, for instance by more efficient training or incentive schemes. For instance, the firm may have the option to invest in the reduction of α. If the cost of investment is low enough, then the firm may decide to undertake such an investment, since the benefit would be a higher level of product quality s.

Of course, this study has several limitations, considering the empirical proof of the model as the relevant contribution to be made in future work. In this sense, this article also motivates the overlapping of multidisciplinary theoretical perspectives to contribute to the business strategy literature research agenda with high implications for practitioners.

Obviously, the complex reality of different industries cannot be reduced into a single linear formula, especially when in regard to the human aspects of business. However, this model also poses relevant questions in terms of public policy and managerial decisions. As mentioned in Deloitte Consulting LLP and Bersin by Deloitte (2014) different industries have different talent priorities. Some need to invest in HC in order to remain competitive when technical SKA are needed to operate and compete (e.g., technology companies, professional services or health care), or when the industry faces radical transformations and rapidly evolving products or services (e.g., media and telecommunications, computers and software, pharmaceuticals, or energy companies), or where the capability and productivity of workforce is particularly relevant (e.g., auto manufacturers, oil and gas, or social services).

It is also worth noticing that a positive relationship between HC and firm success is more evident in at least three cases, as noted by Choi et al. (2014): 1) in new-technology knowledge-intensive industries, because of the effect of reducing uncertainty associated with innovation and dynamic environments; 2) in start-ups and emerging businesses, as a result of management openness and disposition to learn and adapt without the burden of routines, established practices and track records; and

3) in developing countries, because HC scarcity and the availability of more heterogeneous talent is more likely to create SCA for resource holders in that context.

However, as shown in our model, there are cases (like in new-technology companies) where high uncertainty and risk are perceived –because of the venture itself and the knowledge-intensive business they are in- that makes it difficult for companies to obtain the requisite resources, especially when they depend on external resource holders (Choi et al., 2014).

In any case, every sector needs to develop leadership skills and vision for effective management in times of change and uncertainty. When it comes to strategy execution, people are a key factor in making business plans and strategies feasible. Management decisions that delay HC investments could be explained by looking at industries or companies competing with low quality products or services, or because they are competing in mature markets with low entry barriers. This could also be the case for firms in crisis that need cash flow and short term gains in markets, and demand innovations and rapidly evolving products and services. However, a lack of SCA is a threat to survival in markets with more competitive firms.

Open economies stimulate modern competition and technology transfers that result in higher skilled labor and better capital utilization, specifically in manufactured products or services more than in commodities with low value-added (Miller and Upadhyay, 2000). For that reason, skills development should be an essential part of HRM concerns, especially related to improving firm productivity, contributing to the optimization of processes, lowering costs, participating in value-added activities and getting higher returns for business. They all depend on training and education to improve the capacity of the workforce to absorb information, operate new technologies and enhance flexibility and adaptability (Ogunade, 2011).

As suggested in Lall (1999) HR must be involved in "skill development through formal education and training and capability formation through specific technology-based experience". In low-skilled labor markets, workforce development frequently depends on foreign direct investments by multinational corporations attracted by low labor costs and/or natural resources. But investments are also typically oriented to create enough capabilities for the efficient use of simple labor-intensive technologies, avoiding the creation of advanced skills that are centralized elsewhere in the supply-chain. Therefore, if the government does not upgrade its education system, they will remain stagnant at low

levels (Lall, 1999).

On the other hand, business enterprises in developing countries usually provide a high level of training in order to obtain an SCA and meet only firm-specific needs, with their own supply of equipment and technical information and expectations of low labor mobility in terms of their workforce. As highlighted in Tan and Batra (1996) these strategies are typical in big companies, usually with foreign capital participation, looking for an educated and skilled workforce, where other factors are also important such as R&D, licenses and quality control in order to be an export oriented firm.

In the literature, reviewed by Brenner (2004), HC has been traditionally considered crucial for clusters and considered pivotal criteria for strategic decisions on relocation of factories and business units, because of the need to rely in local labor markets. In fact, it has been considered that there is a positive relationship between local HC and the birth and evolution of start-ups, the attracting of more new and bigger firms, and their level of innovation and production efficiency. It has also been signaled that these situations are related to transferable HC (available through knowledge provided by formal education), but especially through firm-specific non-transferable HC (available through practical experience), highly associated with organizational learning. In addition, these conditions are usually correlated with the potential of certain regions to attract a new talented workforce and new companies, with influence on the local education system, generating higher levels of productivity.

A strong HC base and knowledge transfer from higher levels of inter-firm job mobility are key parts of successful clusters. However, according to Otto and Fornahl (2010), demand for HC seems to depend on the cluster life cycle. If demand for a talented workforce is relatively modest when clusters are in the emergence stage, they all rely on the local HC base when they are growing. Therefore, in the early stages, HC can be created by training and educating students or by job mobility from other industries and regions. The adaptability of the local workforce to the needs of the firms in this period is also a vital factor. In fact, some industrial clusters rely more on the resource creation and attraction of workers from other regions and industries than on the availability of local HC, except when rare key competencies and specialized knowledge is required, because general competencies (e.g., administrative and sales skills) are usually available.

Following the ideas suggested by Otto and Fornahl (2010), when internal resources are available, HR must work intensively on in-house training and advanced education of local workers to enable

a quick adaptation to business conditions and requirements of new ventures. They also need to be competent in attracting highly adaptable and qualified employees from other regions and industries to boost performance in the early stages, but, at the same time, developing, measuring and keeping high levels of productivity in terms of the general jobs filled with the available and experienced local workforce. In contrast, in the case of established and growing firms, developing and retention should become key strategies for HR managers to keep the specific HC of the firm. In any case, HR has a double role to play in these markets where certain particularly competitive SKAs are scarce: whether attracting the best talent available in the market, especially for key positions, or retaining top performers in those same positions.

Either way, developing high-potential talents with the needed SKAs is needed in order to prepare them to fill those positions in time; on the other hand, continuous improvement is needed to keep key performers updated, productive, and motivated.

5   Concluding Remarks

The basic contribution of the paper is to highlight the fact that a firm's choice of strategy in order to create and sustain a competitive advantage is constrained by the characteristics of the environment in which it operates. In particular, we focus on the fact that the level of HC development may be an important factor constraining the set of feasible strategies that the firm may choose.

To develop this argument, we proposed a theoretical model of vertical product differentiation. In the model, a domestic firm must compete against a large number of international companies. To engage in competition against its rivals, the domestic firm must choose the quality level of its products or services. This level of quality is in turn determined by the given level of HC of its employees. The firm may choose to upgrade this quality at a cost, by using certain HRM practices characterized by being costly and subject to decreasing returns. We showed that a higher level of available HC never decreases the quality of the final product or service and the level of investment in HRM practices within the firm.

The model contributes to the course taken by the theoretical overlapping between the strategy and HRM literatures. Certainly, investments in firm-specific HC to develop non-imitable KSA may increase a firm's probability to achieve SCA. However, we use the model to argue that low-skilled

labor markets constrain firms in the formulation of their strategies based on HC. This suggests that the literature on competitive advantage must also consider labor market characteristics as a relevant factor, in order to narrow the gap between expected and feasible strategies' implementation.

Finally, competitive advantages based on non-HC assets also modify, at least, the nature of the HRM role in strategy formulation. While this study does not empirically study the effects of investment on the process of KSA creation and development, it calls for the measurement of KSAs, as well as their potential development. Therefore, an expanded scope of the HRM's role will help firms to narrow the gap between expected and feasible strategies' implementation.

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